

TMDL FOR TURBIDITY FOR BAYOU COCODRIE (SUBSEGMENT 101601) IN THE RED RIVER BASIN, LOUISIANA Fact Sheet

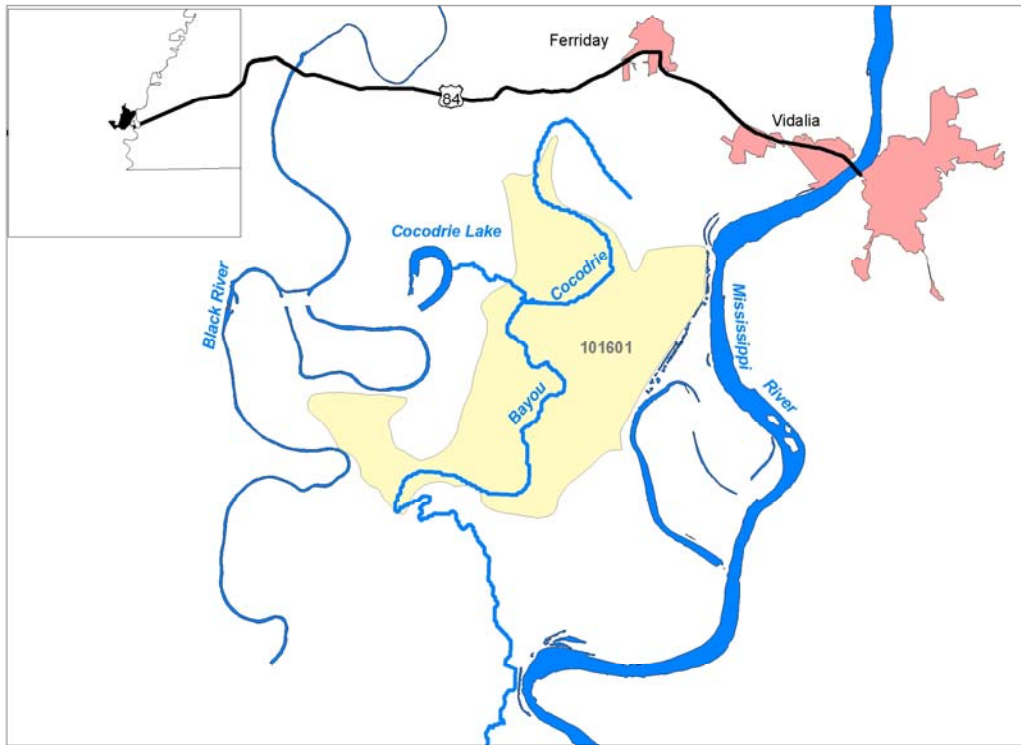


Figure 1. Location of Bayou Cocodrie (subsegment 101601) in the Red River Basin.

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations (Title 40 of the *Code of Federal Regulations* [CFR] Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for waterbodies that are not meeting water quality standards. A TMDL establishes the amount of a pollutant that a waterbody can assimilate without exceeding its water quality standard for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and nonpoint sources to restore and maintain the quality of the state's water resources.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody, and may include a future growth (FG) component.

This report presents a TMDL that has been developed for turbidity for Bayou Cocodrie (subsegment 101601). This subsegment is located southwest of Vidalia, Louisiana in the Red River basin in eastern central Louisiana. The watershed of this subsegment is 99 mi². The two largest land uses are row crops (74%) and wetlands (20%).

This waterbody was included on the Louisiana Department of Environmental Quality (LDEQ) final 2004 303(d) list as not supporting its designated uses of fish and wildlife propagation and outstanding natural resource waters due to turbidity values exceeding the allowable value in the water quality standards. This subsegment was ranked as priority #1 for TMDL development on the 303(d) list. Irrigated and non-irrigated crop production was identified as the suspected cause of the turbidity impairment. The impairment and the applicable numeric water quality criterion for this TMDL are shown below in Table 1.

Table 1. Impairment and water quality standards for Bayou Cocodrie subsegment (101601).

Subsegment Number	Subsegment Name	Impaired Use*	Parameter Causing Impairment	Suspected Source of Impairment	Numeric Criterion from Standards
101601	Bayou Cocodrie	FWP, ONR	Turbidity	Irrigated and non-irrigated crop production	25 NTU

*FWP = Fish and Wildlife Propagation, ONR = Outstanding Natural Resource Waterway

Because turbidity cannot be expressed as mass load, this turbidity TMDL was expressed using TSS as a surrogate for turbidity. A regression between TSS and turbidity was developed and was used to establish a target TSS concentration of 26 mg/L to correspond with the 25 NTU turbidity criterion from the state water quality standards.

This TMDL was developed using a load duration curve method. This method determines allowable pollutant loadings for a range of measured stream flow conditions. There are four steps for applying this methodology. First a flow duration curve is developed using flows observed at a USGS flow gage on the impaired stream or as close as possible to it. Next, the flow duration curve is converted to a load duration curve by multiplying the measured flow by the target TSS concentration. In the third step, observed loads (calculated by multiplying a measured pollutant concentration by the stream flow for that day) are plotted with the load duration curves made in step two. Percent reductions required to meet water quality criterion (or associated targets) are determined by reducing the measured concentrations until the observed loads are all less than the load duration curve value associated with the same flow. Finally the TMDL, MOS, FG, WLA and LA are calculated based on the reduced loads.

In TMDL development, allowable loadings for all pollutant sources are determined so that they add up to no more than the TMDL. WLAs account for permitted point source discharges. There was only one permitted point source discharge in subsegment 101601. The WLA for this point source discharge was set to zero because the surrogate being used for this TMDL (TSS) is considered to represent inorganic suspended solids and the TSS in this discharge was assumed to consist primarily of organic solids (which are already addressed by LDEQ through their permitting of point sources to maintain water quality standards for DO).

The LA includes background loadings and human-induced nonpoint sources. The MOS was implicit based on the conservative assumption of treating TSS as a conservative parameter (i.e. assuming it does not settle out). In addition to the implicit MOS, an explicit FG was set equal to 10% of the TMDL. A summary of the TMDL is presented in Table 2.

Table 2. Summary of TMDL.

Parameter	Subsegment Number	Subsegment Name	Loads (tons/day)					Percent Reduction Needed
			WLA	LA	MOS	FG	TMDL	
Turbidity	101601	Bayou Cocodrie	0	10.06	implicit	1.12	11.18	87%

For More Information

EPA seeks input on this proposed TMDL, including comments, information, and data from the general and affected public. For additional information on this TMDL project, please contact the EPA staff listed below:

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